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## SYNOPSIS OF NORTH-AMERICAN INVERTEBRATES. VIII.

### THE ISOPODA. — PART II.

#### *ASELLOTA, ONISCOIDEA, EPICARIDEA.*

HARRIET RICHARDSON.

IN addition to the references to the literature already given in Part I of the Synopsis of the Isopoda is the following list of papers pertaining especially to the fresh-water forms.

1871. PACKARD, A. S. The Mammoth Cave and its Inhabitants. *Amer. Nat.* Vol. v, p. 751.
1874. SMITH, S. I. The Crustacea of the Fresh Waters of the United States. *Rept. U. S. Fish Comm. for 1872-1873.* Pp. 657-661.
1876. FORBES, S. A. List of Illinois Crustacea, with Descriptions of New Species. *Bull. Ill. State Lab.* N. H., No. 1, pp. 8-13.
1876. HARGER, OSCAR. Description of Mancasellus brachyurus, a New Fresh-Water Isopod. *Amer. Journ. Sci.* (3). Vol. xi, pp. 304, 305.
1881. PACKARD, A. S., and COPE, E. D. The Fauna of Nickajack Cave. *Amer. Nat.* Vol. xv, pp. 879-880.
1890. GARMAN, H. A New Fresh-Water Crustacean. *Bull. Essex Institute.* Vol. xxii, pp. 28-30.
1899. HAY, W. P. Description of a New Species of Subterranean Isopod. *Proc. U. S. Nat. Mus.* Vol. xxi, pp. 871, 872.

### SYNOPSIS OF THE ISOPODA (*continued*).

#### IV. ASELLOTA.

- a.* Eyes generally present. First pair of legs prehensile or subcheliform. Last three pairs of legs ambulatory, not natatory.
- b.* Three posterior segments of thorax not sharply marked off from the four anterior ones, and not smaller. Caudal segment large, shield-like. Eyes, when present, lateral or subdorsal, not placed on peduncle-like projections of the head. Superior antennæ issuing close together. Legs subequal in length.

- c. Lateral parts of head scarcely expanded. Eyes, when present, small, lateral. Peduncle of inferior antennæ without small accessory appendage outside of third joint. Legs ambulatory, except first pair, which are distinctly subcheliform; legs with dactylus generally uniungiculate. First pair of pleopoda in female very small, not operculiform. Outer lamella of second pair very large and incrustated, so as to form, together with the corresponding lamellæ of the other side, a sort of operculum, covering the two succeeding pairs.

Family XV. Asellidæ

- c'. Lateral parts of head lamellarly expanded. Eyes, when present, usually subdorsal. Peduncle of inferior antennæ generally with small accessory appendage outside of third joint. Legs ambulatory, except first pair, which are sometimes prehensile; legs with dactylus generally bi- or tri-ungiculate. First pair of pleopoda in female transformed into a single, large operculum. Outer lamellæ of two succeeding pairs narrow and confluent with basal part . . . . Family XVI. Janiridæ

- b'. Three posterior segments of thorax, as a rule, sharply marked off from four anterior ones, and much smaller. Caudal segment more or less vaulted above, subpyriform. Eyes, when present, placed on the tips of lateral peduncle-like projections of the head. Superior antennæ placed widely apart. First pair of legs much shorter than others. Succeeding pairs more or less rapidly increasing in length . . . . . Family XVII. Munnidæ

- a'. Eyes wanting. First pair of legs subprehensile. Last three pairs of legs natatory, with some joints flattened and ciliated. First pair of legs shorter than three following pairs. Second, third, and fourth pairs very elongate . . . . . Family XVIII. Munnopsidæ

FAMILY XV. ASELLIDÆ (FRESH-WATER ISOPODA).

- a. Mandibles without a palp. Last six pairs of legs with dactylus biungiculate . . . . . Mancasellus Harger
- a'. Mandibles with a three-jointed palp. Last six pairs of legs uniungiculate.
- b. Eyes present. Body oblong, depressed. Head small, narrower and shorter than first thoracic segment. Caudal segment not longer than broad . . . . . Asellus Geoffroy
- b'. Eyes wanting. Body elongate, narrow. Head large, not narrower than first thoracic segment, and longer. Caudal segment much longer than broad . . . . . Cæcidotea Packard

Genus Mancasellus Harger.

- a. Lateral margins of head entire.

*Mancasellus brachyurus* Harger, Virginia

*a'*. Lateral margins of head not entire.

*b*. Lateral margins of the head with a deep cleft on either side.

*Mancasellus macrourus* Garman, Ky., Tenn.

*b'*. Lateral margins of the head with a large rounded sinus on each side in the middle.

*c*. External antennæ as long or longer than the body.

*Mancasellus lineatus* (Say), South Carolina

*c'*. External antennæ half as long as the body.

*Mancasellus tenax* Harger, Lake Superior

Genus *Asellus* Geoffroy.

*a*. Caudal stylets, or uropoda longer than terminal abdominal segment. Post-lateral margins of head without spines.

*b*. Caudal stylets broad and flattened. Propodus of first pair of legs much enlarged and subglobular, with a prominent acute tooth about, or a little above, the middle, and a lobe bearing one or two acute teeth near the base on its palmar margin.

*Asellus communis* Say, Conn., Penn., Ind., Ill., Mich., Miss.

*b'*. Caudal stylets extremely narrow and cylindrical. Propodus of first pair of legs narrow, elongate, without prominent acute teeth on its palmar margin.

*Asellus attenuatus* Richardson, Virginia

*a'*. Caudal stylets shorter than terminal abdominal segment. Post-lateral margins of head produced into prominent lobes bearing spines.

*b*. Post-lateral lobes bearing each several stout spines. Lateral margins of all the thoracic segments except the first with no emargination. Flagellum of first pair of antennæ consists of eleven to thirteen joints. Caudal stylets broad and flat, half as long as terminal abdominal segment . . . *Asellus brevicauda* Forbes, Illinois

*b'*. Post-lateral lobes bearing each a single spine. Lateral margins of all the thoracic segments except the first distinctly emarginate. Flagellum of first pair of antennæ consists of nine joints. Caudal stylets broad and flat, but narrower than in *A. brevicauda*, and three-fifths as long as terminal abdominal segment

*Asellus intermedius* Forbes, Illinois

*Asellus tomalensis* Harford, California

The description of this form is so meagre and insufficient that it is impossible to place it in the key with the other species of *Asellus*.

Genus *Cæcidotea* Packard.

*a*. Caudal stylets nearly half as long as body; basal joint or peduncle nearly twice as long as inner ramus; outer ramus from one-third to one-half as long as inner branch. First pair of antennæ short, reaching but little beyond the second joint of the second pair of antennæ.

*Cæcidotea stygia* Packard, Ind., Ill., Ky.

*a'*. Caudal stylets no longer than terminal abdominal segment; basal joint or peduncle shorter than inner ramus; outer ramus most as long as

inner branch. First pair of antennæ long, reaching to the end of the third joint of the second pair of antennæ, and being nearly twice as long as those of *C. stygia*.

*Cæcidotea nickajackensis* Packard, Tennessee

#### FAMILY XVI. JANIRIDÆ.

*a.* Eyes dorsal. Antennæ of the first pair well developed, with multi-articulate flagellum, or with flagellum rudimentary. Antennæ of the second pair long, with multi-articulate flagellum; peduncular joints not dilated. Mandibles with a three-jointed palp, and with cutting part separated from molar part by a deep incision.

*b.* Head without any true rostrum. First pair of antennæ extremely small, with flagellum rudimentary. Second pair of antennæ of moderate length, without any distinctly squamiform appendage. First pair of legs not prehensile. Uropoda extremely small, branches very short, nodiform . . . . . Jæra Leach

*b'.* Head with prominent rostral projection, obtuse in front, or with a comparatively short rostral projection. First pair of antennæ well developed; flagellum multi-articulate. Second pair of antennæ very much elongated, with a well-marked, scale-like appendage outside of third joint. First pair of legs prehensile. Uropoda largely developed, with branches slightly unequal.

*c.* Head with lateral parts produced to very prominent acute lappets. Segments of thorax with lateral parts lacinate and produced. Caudal segment forming on each side, at the end, a triangular expansion . . . . . Ianthe Bovallius

*c'.* Head with lateral parts not produced into lappets. Segments of thorax with lateral parts not produced, not lacinate. Caudal segment rounded, not expanded laterally . . . Janira Leach

*a'.* Eyes lateral. Antennæ of the first pair small, with flagellum obsolete. Antennæ of the second pair short, with peduncular joints dilated, rudimentary flagellum composed of five articles, and equal in length to the width of the head. Mandibles with a three-jointed palp, and with cutting part composed of five teeth . . . Jæropsis Koehler

Genus Jæra Leach.

*a.* Anterior margin of the head broadly excavated on each side over the bases of the antennæ. Extremity of terminal segment notched for the insertion of the uropoda, the median point being almost imperceptible . . . . . Jæra marina (Fabricius), *N*, surface

*a'.* Anterior margin of the head nearly straight. Extremity of terminal segment with a double excavation, the median point reaching the extremity of the sides . . . Jæra wakishiana Spence-Bate, *A*

Genus Ianthe Bovallius.

*a.* Head with prominent rostrum.

b. Lateral margins of head produced into two angulations. Terminal segment of the body, with central posterior portion acute, triangular. Epimera evident . . . *Ianthe triangulata* Richardson, *D*

b'. Lateral margins of the head produced in one anterior angulation. Terminal segment of the body, with central posterior portion nearly straight, rounded. Epimera not evident.

c. Rostrum as long as the head. Flagellum of first pair of antennæ 12-articulated, shorter than the breadth of the head. Flagellum of second pair of antennæ 50-articulated. First thoracic segment shorter than second. Second and third segments equal, and longest, much longer than seventh. Terminal segment smooth on dorsal side, without spine-like tubercle. Peduncles of uropoda longer than postero-lateral angulations of terminal segment.

*Ianthe spinosa* (Harger), *N*, 80-100 fms.

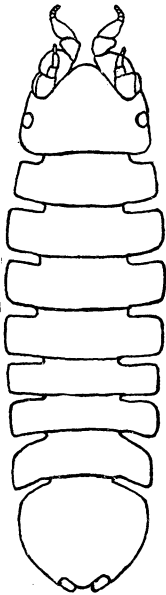


FIG. 12. — *Jæropsis lobata*.

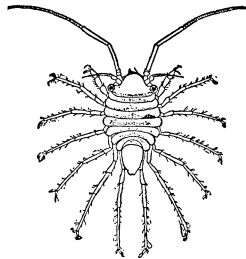


FIG. 13. — *Munna fabricii*.

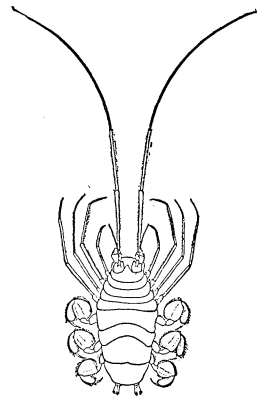


FIG. 14. — *Eurycope cornuta*.

c'. Rostrum much longer than head. Flagellum of first pair of antennæ 60-70-articulated, nearly as long as the breadth of the head. Flagellum of second pair of antennæ 280-articulated. First thoracic segment as long as second. Seventh segment longest. Terminal segment of body, with a single spine-like tubercle on its dorsal side. Peduncle of uropoda shorter than postero-lateral angulations of terminal segment of body . . . . . *Ianthe speciosa* Bovallius, *N*

a'. Head without rostrum, in place of which is small median point.

*Ianthe erostrata* Richardson, *A*

Genus *Janira* Leach.

a. Anterior margin of the head straight.

*Janira maculosa* Leach, *N*, 100-116 fms.

a'. Anterior margin of the head not straight.

- b.* Front of head three-lobed, the center lobe subacute, rather longer than others, but not rostrate. . . *Janira occidentalis* Walker, *P*
- b'.* Front of head produced in the middle in a short, sharp rostrum, and the antero-lateral angles of head also produced.
- c.* Antero-lateral angles of head sharp. Lateral margins of first four thoracic segments obtusely incised, each showing two broad angulations. Uropoda of female shorter than half the terminal segment; those of male as long as terminal segment of body . . . . *Janira tricornis* (Krøyer), *N*, 5–50 fms.
- c'.* Antero-lateral angles of the head shorter and less sharp. Margins of the first thoracic segment rounded, not emarginate. Uropoda alike in the two sexes, and as long as the terminal segment of the body.

*Janira alta* (Stimpson), *N*, 35–300 fms.

Genus *Jæropsis* Koehler . . . . . *Jæropsis lobata* Richardson, *D*

#### FAMILY XVII. MUNNIDÆ.

Genus *Munna* Krøyer.

- a.* Caudal segment, with lateral edges evenly convex, and each armed with a single slender denticle; apical lamellæ distinctly serrated. Eyes large. Superior antennæ, with flagellum composed of four joints, including very small apical joint. Flagellum of inferior antennæ longer than peduncle. Last pair of legs scarcely longer than body. Legs slender. Uropoda obliquely truncate at tip.
- Munna fabricii* Krøyer, *N*, 12–200 fms.
- a'.* Caudal segment, with lateral edges rather bulging in front, and each armed with four strong denticles; without any serrulated lamellæ. Eyes small. Superior antennæ, with flagellum composed of three articulations, including very small apical joint. Flagellum of inferior antennæ not attaining the length of the peduncle. Last pair of legs scarcely longer than anterior division of body. Legs shorter and stouter than usual. Uropoda produced at tip into several dentiform projections, one of which is hook-like.

*Munna krøyeri* Goodsir, *N*, 10–60 fms.

#### FAMILY XVIII. MUNNOPSISÆ.

- a.* Head of moderate size, deeply emarginate on each side for the insertion of the antennæ; frontal part produced. First four thoracic segments transversely excavated dorsally. Superior antennæ, with flagellum multi-articulate. Natatory legs of the same structure, carpal joint foliaceous.
- b.* Body, with anterior division much broader than posterior; three posterior segments densely crowded together. Caudal segment

oblong-oval. Mandibles without any molar expansion; cutting edge but slightly dentated. First two pairs of legs of same structure, though somewhat different in size; two succeeding pairs elongated. Dactylus wanting on natatory legs. Uropoda simple, biarticulate . . . . . Munnopsis M. Sars

*b'*. Body, with anterior division less sharply marked off from posterior; three posterior segments very large and broad. Caudal segment semioval. Mandibles with molar expansion; cutting edge divided into strong teeth. First pair of legs shorter than three succeeding pairs, which are subequal in length, and very much elongated. Dactylus distinct on natatory legs. Uropoda biramous, branches single-jointed . . . . . Eurycope G. O. Sars

*a'*. Head very large and broad, transversely truncated in front, lateral parts greatly expanded. First four thoracic segments slightly excavated transversely. Superior antennæ, with flagellum not much elongated. First two pairs of natatory legs of similar structure, carpal joint large and expanded, cordiform; last pair much narrower than two succeeding pairs, carpal joint but slightly expanded. Caudal segment triangular in form . . . . . Ilyarachna G. O. Sars

Genus Munnopsis M. Sars . *Munnopsis typica* M. Sars, *N*, 20-122 fms.

Genus Eurycope G. O. Sars.

*Eurycope cornuta* G. O. Sars, *N*, 119-220 fms.

Genus Ilyarachna G. O. Sars.

*Ilyarachna hirticeps* G. O. Sars, *N*, 100-227 fms.

## V. ONISCOIDEA (Terrestrial Isopoda).

*a*. Buccal mass not very prominent below. First maxillæ, with two plumose setæ on the inner plate. Mandibles with molar expansion obsolete, without any triturating surface, it being replaced by brush-like recurved setæ.

*b*. External antennæ generally long, close together, with antennal openings large. Body, as a rule, scarcely able to be contracted into a ball. Head less manifestly immersed in first thoracic segment. Lateral parts of the head separated by a vertical marginal and infra-marginal line. Clypeus arched. Legs generally long. Uropoda produced, reaching beyond the terminal segment of the abdomen and the preceding segment. Terminal segment narrower than preceding ones and conically produced at end.

### Family XIX. Oniscidæ

*b'*. External antennæ generally short, with antennal openings small. Body able to be contracted into a ball. Head immersed in first thoracic segment. Lateral parts of the head undifferentiated. Clypeus perpendicular. Legs generally short. Uropoda short, flattened, not reaching beyond the terminal segment of the



- abdomen or the preceding segment. Terminal segment short and broad . . . . . Family XX. Armadillididæ
- α'*. Buccal mass prominent. First maxillæ with three plumose setæ on the inner plate. Mandibles with molar expansion large and broad, exhibiting a finely fluted triturating surface.
- β*. Head without any lateral lobes, frontal part rounded. Eyes well developed or wanting. Inner antennæ with last joint very small, and without distinctly developed sensory filaments. Posterior maxillæ with two thick hairy bristles. Maxillipeds with terminal part distinctly five-articulate, masticatory lobe truncate at tip, epignath short. External sexual appendages in male double. Inner branches of first pair of pleopoda of a similar structure in both sexes, that of second pair in male terminating in a long stylet. Both branches of uropoda styliform.

## Family XXI. Ligiidæ

- β'*. Head with distinct, though not very large lateral lobes, front more or less produced. Eyes small or wanting. Inner antennæ with last joint well developed and tipped with a number of delicate sensory filaments. Posterior maxillæ without any bristles. Maxillipeds with terminal part generally imperfectly articulated, masticatory lobe terminating in a thin lash, epignath narrow, linguiform. Sexual appendage of male simple; inner branch of both first and second pairs of pleopoda transformed for copulative purposes. Uropoda with branches conically tapered.

## Family XXII. Trichoniscidæ

## FAMILY XIX. ONISCIDÆ.

- α*. Flagellum of external antennæ biarticulate. External opercular ramus of the first, second, and rarely of the third, or all the pairs of abdominal appendages furnished with tracheæ.
- β*. Abdomen abruptly narrower than thorax. Epimera of all the abdominal segments small, subappressed.
- Metoponorthus Budde-Lund
- β'*. Abdomen not abruptly narrower than thorax. Epimera of all the abdominal segments large, prominent, well developed.
- γ*. Body very convex, capable of being rolled up into a perfect ball. Joints of the flagellum of the external antennæ subequal. Last abdominal segment reaching very little beyond the epimera of the preceding segment. External branches of the uropoda equal in both sexes. External opercular branch of all the abdominal appendages furnished with tracheæ.

## Cylisticus Schnitzler

- γ'*. Body more or less depressed, with lateral parts lamellarly expanded. Joints of the flagellum of the external antennæ with

the first joint generally longer than the second, often subequal, or even a little shorter. Last abdominal segment generally not reaching beyond the epimera of the preceding segment. External branches of the uropoda longer in the male than in the female. External opercular branch of the first and second pairs of abdominal appendages, and, in some of the species, of all the pairs, furnished with tracheæ . . . Porcellio Latreille

- a'*. Flagellum of external antennæ triarticulate. External opercular ramus of the abdominal appendages containing no special respiratory organ.
- b*. Front of head produced at the middle and at the sides in tubercles; lateral tubercles horn-like . . . Alloniscus Dana
- b'*. Front and sides of head not produced in tubercles. With or without lateral lobes.
- c*. Abdomen abruptly narrower than the thorax. Epimera of thoracic segments small. Epimera of abdominal segments very small, but manifest. External branches of the uropoda styliform . . . Philoscia Latreille
- c'*. Abdomen not abruptly narrower than thorax. Epimera of thoracic segments large. Epimera of abdominal segments large. External branches of the uropoda conical.
- d*. Surface of body granulated or tuberculate. Epimera of all the thoracic segments with the posterior angle acute. Basal article of the uropoda oblong, with the outer side obliquely carinated . . . Oniscus Linnæus
- d'*. Surface of body setigerous, scarcely granulated. Epimera of the first three thoracic segments with the posterior angles roundly obtuse, of the fourth segment straight, and of the other segments acute. Basal article of the uropoda short and broad, with the outer side sulcate.

Lyprobius Budde-Lund

Genus *Metoponorthus* Budde-Lund.

- a*. Inner mala of the right mandible with four to five, of the left mandible with six pencils of hairs. Second and third joints of the peduncle of the second pair of antennæ furnished with a small apical tooth; first joint of flagellum much longer than second joint. No middle frontal lobe. Color brown, or reddish-brown.

*Metoponorthus pruinosus* Brandt, North America

- a'*. Inner mala of the right mandible with four, of left mandible with five pencils of hairs. Second and third joints of the peduncle of the second pair of antennæ without small apical tooth; first joint of flagellum shorter than second. Middle frontal lobe small, widely rounded. Color varying from gray to black, with three longitudinal lines of white spots . *Metoponorthus virgatus* Budde-Lund, Florida

Genus *Cylisticus* Schnitzler.

*Cylisticus convexus* De Geer, North America

Genus *Porcellio* Latreille.

*a.* Surface of body smooth.

*b.* Frontal median lobe of head rounded, a little produced. Articles of the flagellum of the external antennæ equal in length. Last segment of the abdomen with its extremity widely rounded.

*Porcellio formosus* Stuxberg, California

*b'.* Frontal median lobe of head more acute, minute. First article of the flagellum of external antennæ equal in length to the other, or a little longer. Last segment of the abdomen with its extremity acute . . . . . *Porcellio lævis* Latreille, North America

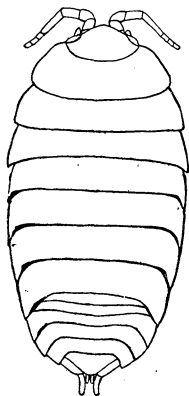


FIG. 15. — *Alloniscus perconvexus*.

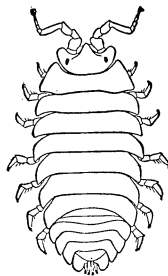


FIG. 16. — *Actoniscus ellipticus*.

*a'.* Surface of body roughly granulate or tuberculate.

*b.* Inner mala of the mandibles with four to five pencils of hairs. Body with spots.

*c.* Third joint of the peduncle of the second pair of antennæ furnished with a small apical tooth. Frontal lateral lobes of moderate size. Color varying from gray to black, with three longitudinal lines of white spots. Flagellum with joints subequal, or first shorter than second.

*Porcellio rathkei* Brandt, North America

*c'.* Second joint of the peduncle of the second pair of antennæ furnished with a large apical tooth. Frontal lateral lobes large. Color yellow; body spotted with black, spots arranged in longitudinal lines. Flagellum with first joint a little longer than second joint. *Porcellio spinicornis* Say, North America

*b'.* Inner mala of the right mandible with four to five pencils of hairs, of left mandible with seven to eight pencils. Body without spots. Frontal lateral lobes of head large, oblique.

*Porcellio scaber* Latreille, North America

Genus *Alloniscus* Dana.

- a.* Surface of body very densely granulated. Margins of epimera serrated.

*Alloniscus mirabilis* Stuxberg, California

- a'.* Surface of body punctate.

- b.* Lateral processes of head large, prominent.

*Alloniscus cornutus* Budde-Lund, California

- b'.* Lateral processes of the head small, scarcely prominent.

*Alloniscus perconvexus* Dana, Or., Cal.

Genus *Philoscia* Latreille.

- a.* Body smooth, without spines.

- b.* Body striped with two broad dorsal bands.

*Philoscia vittata* Say, North America

- b'.* Body not striped, but dotted with numerous spots.

- c.* Frontal marginal line straight. Color varying from black to brown, with white spots.

*Philoscia nigricans* Budde-Lund, Louisiana

- c'.* Frontal marginal line produced in the middle, a little arcuate.

Color violet, with white spots.

*Philoscia brevicornis* Budde-Lund, Louisiana

- a'.* Body with numerous spines above. *Philoscia spinosa* Say, Georgia

Genus *Oniscus* Linnæus.

- a.* Caudal segment a little shorter than inner branch of the uropoda.

*Oniscus asellus* Linnæus, North America

- a'.* Caudal segment exactly equal to the inner branch of the uropoda.

*Oniscus affinis* Say, North America

Genus *Lyprobius* Budde-Lund.

*Lyprobius pusillus* Budde-Lund, California

## FAMILY XX. ARMADILLIDIDÆ.

- a.* Outer branch of the uropoda small or very small, smooth. Clypeus with the superior margin entire, lobated at the sides. First thoracic segment, often the second also, with the epimera posteriorly cleft, rarely entire. Exterior opercular branch of all the pleopoda furnished with tracheæ . . . . . *Cubaris* Brandt

- a'.* Outer branch of the uropoda large, flattened, lamellar. Clypeus with the superior margin lightly sinuated, not lobated. Epimera of the first thoracic segments simple, entire. Exterior opercular branch of the first and second pairs of pleopoda furnished with tracheæ.

*Armadillidium* Brandt

Genus *Cubaris* Brandt. . . *Cubaris californica* (Budde-Lund), California

*Cubaris affinis* (Dana), California

*Cubaris pisum* (Budde-Lund), Florida

Genus *Armadillidium* Brandt.

*Armadillidium vulgare* (Latreille). North America

## FAMILY XXI. LIGIDÆ.

- a.* Uropoda with branches equal in length, styliform, often filiform. Interior mala of the mandibles with numerous pencils of hairs. Last segment of body broad, with distinct epimeral plates. Maxillipeds with palp 4-5-jointed; epignath rounded. . . . *Ligia* Fabricius
- a'.* Uropoda with branches unequal in length.
  - b.* Extremity of uropoda furnished with two long apical bristles. Interior mala of the right mandible with three pencils of hairs, of the left mandible with five pencils of hairs. Last segment of body small, and without any epimeral plates. Maxillipeds with a five-jointed palp; epignath narrow, linguiform. *Ligidium* Brandt
  - b'.* Extremity of uropoda not furnished with two long apical bristles. *Styloniscus* Dana

Genus *Ligia* Fabricius.

- a.* External antennæ shorter than the body.
  - b.* Uropoda about equal to half the length of the body. *Ligia occidentalis* Dana, *D*, Littoral
  - b'.* Uropoda not equal to half the length of the body.
    - c.* Uropoda equal to one-fifth the length of the body. *Ligia pallasii* Brandt, *AP*, Littoral
    - c'.* Uropoda nearly equal to one-third the length of the body. *Ligia oceanica* (Linn.), *N*, Littoral
- a'.* External antennæ longer than body or equal to length of body. Uropoda about equal to two-thirds the length of body. *Ligia exotica* Roux, *D*, Littoral

Genus *Ligidium* Brandt.

- a.* Inner process of the basal article of the uropoda three times shorter than the external terminal branch; internal terminal branch reaching the apex of the external branch; the two terminal hairs equal in length to the external branch. *Ligidium hypnorum* (Cuvier), *P*, Littoral
  - a'.* Inner process of the basal article of the uropoda four times shorter than the external terminal branch; internal terminal branch long, extending much beyond the apex of the external branch, being a sixth part longer; the two terminal hairs short, equal in length to half the external branch. . . . *Ligidium tenue* Budde-Lund, *A*, Littoral
- Genus *Styloniscus* Dana. . . . *Styloniscus gracilis* Dana, California, Littoral
- Genus *Euphiloscia* Packard. . . . *Euphiloscia elrodii* Packard, Indiana
- This genus probably belongs here.

## FAMILY XXII. TRICHONISCIDÆ.

- a.* Abdomen abruptly narrower than thorax. Head rounded in front, with distinct, though small lateral lobes. Terminal abdominal segment truncate at tip. . . . . *Trichoniscus* Brandt

*a'*. Abdomen not abruptly narrower than thorax.

*b*. Head rounded in front, not lobated at the sides. Abdominal epimera but little developed . . . . . *Scyphacella* Smith

*b'*. Head triangularly produced in front, with large lateral lobes. Abdominal epimera lamellarly expanded.

*c*. Body sculptured dorsally with more or less distinct longitudinal ribs. Terminal abdominal segment truncate at apex. Basal segment of the uropoda not simulating the epimera of the preceding segment . . . . . *Haplophthalmus* Schöbl.

*c'*. Body not sculptured dorsally. Terminal abdominal segment rounded posteriorly. Basal segment of the uropoda simulating the epimera of the preceding segment . . . *Actoniscus* Harger

Genus *Trichoniscus* Brandt.

*Trichoniscus pusillus* Brandt, North America at Niagara

Genus *Scyphacella* Smith . . . *Scyphacella arenicola* Smith, *N*, Beach

Genus *Haplophthalmus* Schöbl.

*Haplophthalmus puteus* Hay, fresh water, Indiana

Genus *Actoniscus* Harger . . . *Actoniscus ellipticus* Harger, *N*, Beach

## VI. EPICARIDEA.

*a*. Body of female distinctly segmented, more or less asymmetrical, twisted either to right or left. Maxillipeds lamellar, biarticulate, and more frequently exhibiting a small terminal joint. Legs seven pairs, sometimes obsolete on one side. Incubatory plates five pairs, more or less arching over the ventral surface of the thorax. Pleopoda forming simple or double lamellæ, all of the same structure, rarely obsolete. Male with all the segments of the thorax sharply defined. Last larval stage with the flagellum of the antennæ 4-articulate; legs of uniform structure; uropoda with inner branch shorter than outer. Parasitic on decapodous Crustacea.

Family XXIII. Bopyridæ

*a'*. Body of female perfectly symmetrical, the segmentation only visible, as a rule, in the middle of the dorsal face. Maxillipeds lamellar, without any terminal joint. Only five pairs of legs present. Incubatory plates comparatively small, sometimes greatly reduced in number, and scarcely at all partaking of the formation of the marsupium, which constitutes two separate cavities, bounded by the lateral walls of the body itself. Pleopoda generally rudimentary or wholly absent. Male with head and first segment of thorax coalesced. Last larval stage with the flagellum of the antennæ 5-articulate; legs of the first pair shorter and thicker than the others; uropoda with the branches subequal. Parasitic on Schizopoda.

Family XXIV. Dajidæ

## FAMILY XXIII. BOPYRIDÆ.

- a.* Elongated appendages attached to the sides of the thorax in the female.
    - b.* Branchiæ affixed to the sides of the abdomen in both sexes. Abdominal branchiæ in the male slender, cylindrical; in the female branching . . . . . Ione Latreille
    - b'.* Branchiæ affixed to the sides of the abdomen in the female. Abdominal branchiæ wanting in male; in female these appendages are simple sacs, not branching . . . . . Argeia Dana
  - a'.* Thorax in female without elongated appendages.
    - b.* Body of female with one side greatly swollen and much longer than other. Segments of thorax only visible dorsally, coxal plates only present on shorter side. Abdomen consisting of five segments. Only first leg present on larger side, others wholly obliterated. Four pairs of pleopoda present. Male with abdominal segments fused. . . . . Phryxus Rathke
    - b'.* Body of female with neither side swollen. Thorax distinctly segmented. Abdomen consisting of six segments. All the legs present on both sides.
      - c.* Pleopoda in female obsolete, replaced by fleshy ridges. Uropoda wanting . . . . . Bopyroides Stimpson
      - c'.* Pleopoda in female present. Uropoda distinct.
        - d.* Legs of female with an adhesive process (exopod) attached to the coxal joint of the legs. This process is papillose in the first four pairs, rudimentary in the last three. Terminal joint of legs is inflated, without claw. Abdominal appendages elongated, coarsely pinnate.
 

Cepon Duvernoy
        - d'.* Legs of female without exopod. Terminal joint of legs not inflated. Abdominal appendages not pinnate.
        - e.* Pleopoda well developed, biramous.
 

Pseudione Kossmann
        - e'.* Lateral margins of abdominal segments divided by marginal furrow into superior and inferior rami; inferior rami conical, papilliform; superior rami consisting of two equal elongated lamellæ.
 

Phyllodurus Stimpson
- Genus Ione Latreille . . . . . *Ione cornuta* Spence Bate; *A*
- Genus Argeia Dana.
- a.* Head transverse. All the thoracic appendages present. All the abdominal appendages present . . . *Argeia pugettensis* Dana, *P*
  - a'.* Head bilobate. Thoracic branchial appendages apparently absent in some of the anterior segments. Last three pairs of abdominal appendages wanting . . . . . *Argeia depauperata* Stimpson, *P*
- Genus Phryxus Rathke . . . . . *Phryxus abdominalis* (Krøyer), *N*

Genus *Bopyroides* Stimpson.

*a.* Margins of body, especially at the head, very acute and somewhat recurved. Lateral extremities of the abdominal segments sharply square-cut . . . . . *Bopyroides acutimarginata* Stimpson, *P*

*a'.* Margins of the body not acute . . . . . *Bopyroides hippolytes* (Krøyer), *N*

Genus *Cepon* Duvernoy . . . . . *Cepon distortus* Leidy, *M*

Genus *Pseudione* Kossmann . . . . . *Pseudione giardi* Calman, *P*

Genus *Phyllodurus* Stimpson . . . *Phyllodurus abdominalis* Stimpson, *P*

#### FAMILY XXIV. DAJIDÆ.

Genus *Dajus* Krøyer . . . . . *Dajus mysidis* Krøyer, *N*